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The Cardinal, Calmeria, and Blackrose Grapes for Vinifera Regions

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INTRODUCTION

Three new vinifera table-grape varieties—Cardinal, Calmeria, and Blackrose—are described in this circular. They originated at the United States Horticultural Field Station, Fresno, Calif., as a result of the grape-breeding program. The first grape crosses at this station were made in 1923, and a modest breeding program has been continued since then.

One of the objectives of the grape-breeding work has been the production of table-grape varieties that will be more attractive in size and color, will have better eating quality, and will extend the season either as earlier maturing types or as late, storage types. The Cardinal, with its early maturity, good eating quality, and attractive appearance, fills an early-market need. The Calmeria, with its late maturity and good storage and eating quality, helps fill the need for a better quality, late-shipping and storage grape. The Blackrose, although maturing when other varieties are on the market, has an attractive jet-black color, very large berries, and good eating quality.

CARDINAL

ORIGIN AND GENERAL DESCRIPTION

The Cardinal grape (introduced in 1946; previously tested as G: 10: 30) resulted from a cross of Flame Tokay × Ribier (Alphonse

Lavallee) made in 1939. The first fruit was produced in 1942. One of the Cardinal's most important characteristics is its early maturity. It is the earliest commercial vinifera variety, ripening about 3 weeks ahead of Sultanina (Thompson Seedless) at the Fresno station, and 7 to 10 days earlier than Sultanina in Arizona and in the more southern valleys in California.

The vigorous, productive vines have dark-green foliage with leaves of medium size. As three to four clusters are often produced on each growing shoot, it is advisable to thin some off when the shoots are 12 to 18 inches long, preblossom stage, in order to produce fruit of superior size and quality. The fruit color is a rich, dark red with grayish bloom. Although they vary somewhat in size, the berries are large—an inch or more in diameter—and nearly spherical. The sturdy clusters weigh about 1½ pounds. Commercial shipments for the past several years have indicated that the Cardinal carries well to eastern markets. The berries adhere well to the stems and have a medium-tough skin and firm flesh. The eating quality is excellent, with a slight muscat flavor noticeable when fully mature. The seeds are rather soft, usually two per berry but ranging from one to four.

TECHNICAL DESCRIPTION

VINE.—Medium vigorous, very productive of cluster forms; canes with short to medium-length internodes, reddish brown; buds starting growth medium late; leaves dark green, 3- to 5-lobed, margin deep dentate.

FLOWERS.—Blossoms self-fertile, stamens upright, opening early.

FRUIT.—Clusters medium large, conical to cylindrical, not broadly shouldered; berries medium-dark red, ripening very early, firm, large, nearly spherical to slightly oblate; skin medium tough with firm pulp; seeds relatively few in number, usually 2 per berry, ranging from 1 to 4.

ADAPTATION

The Cardinal grape (fig. 1) has been tested mainly in California and Arizona. Approximately 1,500 acres were planted in California and about 1,200 acres in Arizona in 1950. The plantings in California ranged from the Imperial, Coachella, and Boreago Valleys to the southern and central San Joaquin Valley. In Arizona, the plantings were concentrated northwest of Phoenix, with smaller plantings on the Yuma Mesa near Yuma. The Cardinal was shipped to eastern markets in carload quantities from points in Arizona and California in 1947 and in increasing numbers in subsequent years. Some export shipments have been made to Pacific islands and South American points.

As the Cardinal is very productive, often bearing three or four cluster forms per growing shoot (fig. 2), some thinning of cluster forms is advisable for best quality fruit. On the shoot shown in figure 2, the two topmost cluster forms could be removed when the shoot is 12 to 18 inches long, or approximately 3 to 4 weeks preceding blossoming. Spur pruning on a cordon training system has been most successful. Short cane pruning has also produced good fruit but usually requires additional thinning of cluster forms. Figure 3 shows a mature vine pruned to spurs and trained on a bilateral (two-arm) cordon system. In the warmer locations, girdling has been practiced to promote color. The girdling consists in removing a ring of bark and a portion of the cambium layer—approximately $\frac{1}{8}$ to $\frac{3}{16}$ inch in



FIGURE 1.—Cardinal grape cluster, slightly more than half size.

width, down to the xylem, or hard woody tissue—from the cordon arms on spur-pruned vines or from the canes on cane-pruned vines, leaving some growing shoots below the girdle for renewal purposes when needed.

The Cardinal grape has been planted in soils ranging from light sandy loams to heavy sandy loams. While earlier maturity has been obtained on the light sandy loams, better set of fruit appears to occur on the heavier sandy loams.



FIGURE 2.—Cardinal growing shoot, with four cluster forms at preblossom thinning time. The upper two forms could be removed.

CALMERIA

ORIGIN AND GENERAL DESCRIPTION

The Calmeria grape (introduced in 1950; previously tested as C: 11: 31.5) resulted from growing in 1939 seed produced from open-pollinated seed of Ohanez (Almeria). The first fruit was produced on this seedling in 1941. The Calmeria is a late shipping and storage vinifera table grape, maturing from late September to early October in the Fresno, Calif., area. The clusters are relatively large, well filled but not compact. The berries are firm and large, with a tough

skin. The fruit color is greenish yellow with a heavy, light-gray bloom. The eating quality is very good, comparing favorably with that of other storage grapes. The vine has been rated as medium in vigor at the Fresno station, but in commercial plantings under more favorable conditions the Calmeria has shown very vigorous growth and heavy fruit production. Commercial shipments during 1950 indicated that it carries well to eastern markets.



FIGURE 3.—Mature Cardinal pruned to spurs on a bilateral (two-arm) cordon training system.

TECHNICAL DESCRIPTION

VINE.—Medium vigorous, productive; canes grayish to yellowish brown, with medium-short internodes; buds prominent, pointed, starting growth medium early, about with Sultanina; leaves medium-light green, 3- to slightly 5-lobed, margin medium dentate.

FLOWERS.—Blossoms self-fertile, stamens upright, bloom opening at a medium time compared with other varieties.

FRUIT.—Clusters large, conical, well filled, not compact, with medium-broad shoulders; berries greenish yellow with heavy light-gray bloom, firm, large, $\frac{5}{8}$ to $\frac{3}{4}$ inch wide by 1 to $1\frac{1}{4}$ inches long, elongated ovoid to cylindrical; skin tough with firm pulp; seeds ranging from 2 to 4 per berry, medium in size, short pyriform, grayish brown.

ADAPTATION

Because of its recent introduction, the Calmeria has been tested mainly in the middle and southern San Joaquin Valley in California, where most of the late shipping and storage vinifera grapes are grown. Conditions favorable for the growing of Ohanez (Almeria) and Emperor grapes appear satisfactory for the growing of Calmeria. It may be adapted to a wider range than these two varieties as its higher sugar content makes earlier harvesting possible. Because the Calmeria is a late vinifera grape, it is recommended for growing where there are at least 200 growing days between killing frosts. The Calmeria in general has some advantages over the Ohanez, which ripens at about the same time. The clusters of Calmeria are more

uniform (fig. 4) because of the upright stamens in comparison with the reflexed stamens of Ohanez. The berries are larger and not so tightly set on the clusters, which makes them better adapted to commercial packing. The "Ohanez spot" has not noticeably affected the Calmeria. When harvested at the same time under similar conditions, the Calmeria usually has a higher sugar content and slightly lower acidity than Ohanez. A comparative test gave 24 percent sugar (Balling scale) and 0.45 acidity, calculated as grams of tartaric acid per 100 cc. of juice, for Calmeria, compared with 20 percent sugar and 0.50 acidity for Ohanez.



FIGURE 4.—Calmeria grape cluster, about one-half size; each rule mark equals one-eighth inch.

The best method of pruning the Calmeria in commercial vineyards has not been determined. It bears well on both spur and cane prunings. Cane pruning may produce too much fruit for best size of berry and quality of fruit. Spur pruning with cordon training, a culture similar to that employed in many Emperor vineyards, has produced excellent fruit.

BLACKROSE

ORIGIN AND GENERAL DESCRIPTION

The Blackrose grape (introduced in 1951; previously tested as H: 3: 47) resulted from a cross of (Damas Rose \times Black Monukka) \times Ribier (Alphonse Lavallee) made at the United States Horticultural Field Station, Fresno, Calif., in 1941. The mother parent (Damas Rose \times Black Monukka) (8: 64: 13) resulted from a cross made in 1929, of which 44 seedlings fruited in 1934. The selection (8: 64: 13) was saved for breeding because of its large size and good eating quality. As it was too soft to be of commercial use, it was crossed with Ribier as the male parent. The Blackrose resulting from this cross first fruited in 1944 at the Fresno station. It is an early-midseason jet-black vinifera table grape, maturing 5 to 7 days ahead of Ribier at Fresno. Its attractive jet-black color, very large berries, and good eating quality recommend it for further trials in the vinifera table-grape areas.

TECHNICAL DESCRIPTION

VINE.—Very vigorous, productive; canes strong, with medium-short internodes, grayish brown with reddish brown around the nodes; buds large, broad, and prominent; leaves medium-dark green, 3- to slightly 5-lobed, large, medium thick and leathery in texture, nearly glabrous on the upper surface to slightly hirsute along veins on the under surface.

FLOWERS.—Blossoms self-fertile, stamens upright, bloom opening at a medium time compared with other varieties.

FRUIT.—Clusters large, conical, well filled, not compact, broadly shouldered; berries jet black with light grayish bloom, ripening in early midseason, firm, crisp, adhering well to pedicel, very large, somewhat variable in shape from typical truncated obovoid to elongated elliptical; seeds hard, ranging from 3 to 5 in the largest berries, rather large, pyriform, grayish brown; eating quality very good.

ADAPTATION

The Blackrose (fig. 5) has been grown mainly in cooperative-grower test plots in the middle San Joaquin Valley, although vines have fruited in the Imperial, Coachella, and southern San Joaquin Valleys in California. Most plantings have been of an acre or less; some additional plantings were made in the spring of 1951. Because of its recent origin, it has not been produced on a large commercial scale. Some fruit shipments have been made to eastern markets and exported to Cuba. Not enough shipments have been made to eastern markets to test thoroughly its shipping qualities. This grape has been grown mostly on the heavier sandy loam types of soil. It should do well on soils where Ribier grows and produces satisfactorily. It bears well on both cane and spur pruning. It appears that spur pruning on a cordon system, similar to that shown for Cardinal (fig. 3), may be employed satisfactorily for Blackrose.

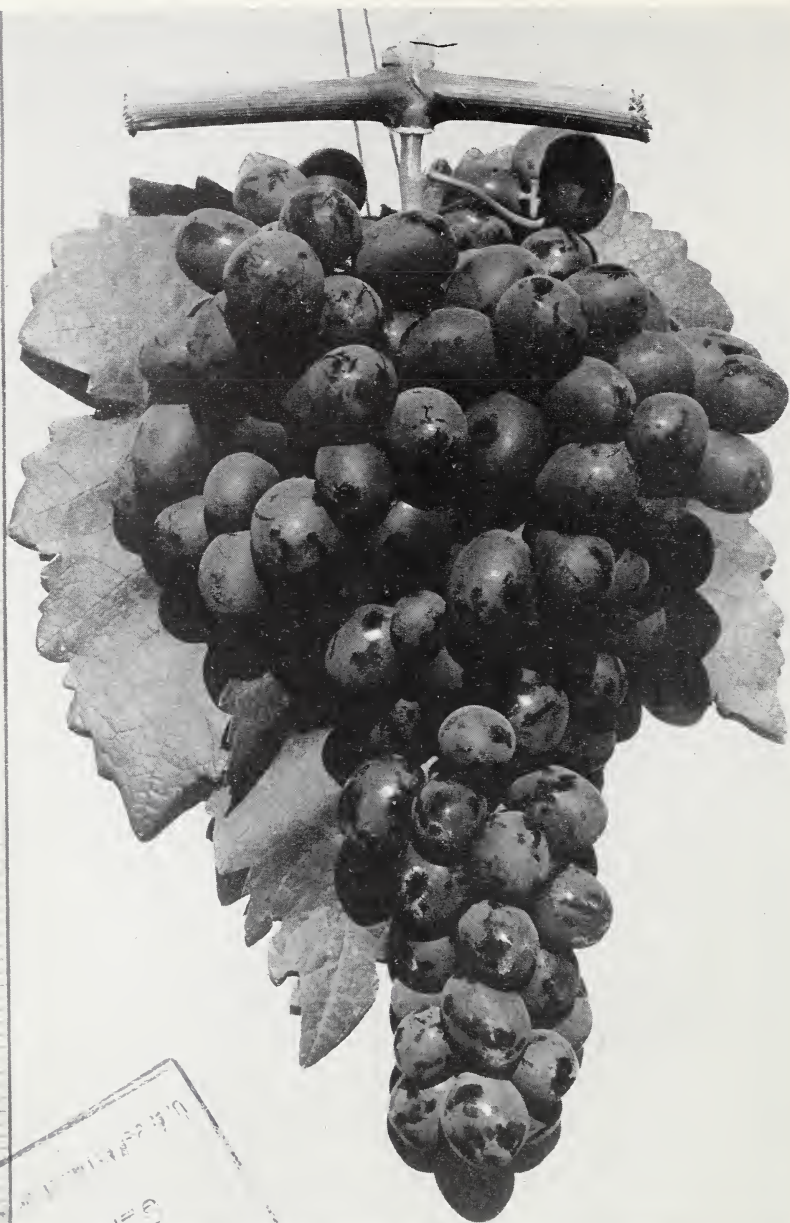


FIGURE 5.—Blackrose grape, one-half natural size.

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